

REMARKS

In the Office Action dated May 26, 2005, claims 1-22 are pending, claims 1-4, 7, 8, 10-13, 15 and 18-22 are rejected and objection is made to claims 5, 6, 9, 14 and 17. Applicants appreciate the acknowledgement of patentable subject matter at least in claims 5, 6, 9, 14 and 17. Reconsideration is requested for at least the reasons discussed hereinbelow.

Claims 5, 9, 14 and 17 were previously submitted as dependent claims.

Claims 1-4, 7, 8, 10-13, 15 and 18-22 are rejected under 35 U.S.C. §103(a) over Nakamura et al. (JP 2000-338818) in view of Hirst et al. (U.S. 6,445,902). Nakamura discloses a fixing device having a first heating member with an internal heat supply and a second heating member with an external surface heating device. As admitted by the examiner, Nakamura fails to teach an induction heating means.

Hirst is cited by the examiner for a teaching of an external induction heating means. In one embodiment, Hirst discloses heating the surface of a heating roller by induction heating and transferring the heat to the fixing roller and the pressure roller by contact with the between a heating roller and the fixing roller or the pressure roller, thereby heating the respective surfaces. In another embodiment, an induction heating device in the form of an "E" (in cross-section) is placed adjacent the surface of the fixing roller and the pressure roller. An electric coil is wrapped around the middle leg of the "E" and the three legs are positioned such that the ends are separated from the surface of the roller. The coil provides a magnetic flux that emanates from the two outer legs of the "E" to induce heat in the rollers. There is no suggestion that it one should form induction coils such that each coil is spaced substantially the same distance from the surface of the rollers to be heated.

In the present invention, an induction heating coil (241) has an arc shape as shown, for example, in Figure 1. In this manner, the magnetic flux can be concentrated toward the center of the induction coil to increase an amount of eddy current generated (see page 18, lines 21-24 of

the specification). As a result, the surface temperature of the pressure roller (232) can be rapidly increased over a large area (see page 18, line 25 - page 19, line 1). Hirst fails to disclose or suggest such an arrangement.

Hirst discloses an arrangement where conductive wires (526) are disposed normal to the surface of the pressure roller (504). Such wires clearly do not have an arcuate shape. In order to generate sufficient magnetic flux, Hirst requires a large flux concentrator (520) from a center pole (518) of which the magnetic flux is generated (col. 9, lines 15-17). Further, only the portions of the pressure roller (504) in the immediate vicinity of the poles are heated.

In the present invention, an induction coil is provided by spirally winding a single wire of Al (see attached drawings 1). When a current is applied through the induction coil, a magnetic field is generated (see attached drawing 2). The lines of magnetic force generated by the induction coil are shown in attached drawing 3. This arrangement allows for a large area of the pressure roller to be heated by the induction coil. Specifically, the area opposite the induction coil, corresponding to almost half of the roller, as shown by the two double headed arrows, may be heated.

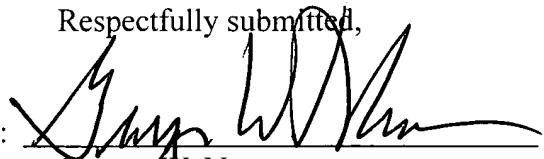
In contrast, the magnetic field of Hirst is generated through the central pole 518 and returns via the magnetic flux concentrator 520. This provides heating only at the portions marked with an ellipsoid (see attached drawing 4), which is very localized. Thus, the structure described by Hirst is substantially different, and performs in a substantially different manner, from that of the present invention.

Thus, it is not seen how the present invention would have been obvious to one of ordinary skill in the art in view of any combination of Nakamura and Hirst.

In view of the amendments and discussion above, it is respectfully submitted that the present application is in condition for allowance. An early reconsideration and notice of allowance are earnestly solicited.

If for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, the Commissioner is hereby authorized and requested to charge Deposit Account No. **04-1105**.

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